

IN THE CLAIMS:

Please replace current claim 1 with the following:

1. (Amended) A capacitive position sensor configured for interconnection to a utilization device, comprising:

a stationary signal-detecting capacitor plate;

a stationary signal-transmitting capacitor plate supported parallel to, and spaced apart from, the signal-detecting capacitor plate, the transmitting capacitor plate being divided into a plurality of electrically separated segments;

a dielectric element disposed between the signal detecting and signal-transmitting capacitor plates;

an elongate member having a user-manipulable proximal end and a distal end coupled to the dielectric element, the member being operative to laterally shift the element in the x or y directions in a plane substantially parallel to the stationary plates as a function of user position;

circuitry in electrical communication with the stationary plates, the circuitry being operative to (a) measure the capacitance between each segment of the signal-transmitting plate and the signal-detecting plate, and (b) determine user position in the x or y directions as a function of the measured capacitance; and

an output for communicating the user position to the utilization device.

Cancel claim 4.

Please replace current claim 5 with the following:

AB
5. (Amended) The position sensor according to claim 1, wherein the dielectric element is non-circular, enabling the circuitry to determine user rotation of the elongate member with or without laterally shifting of the dielectric element.

Please replace current claim 8 with the following:

AY
8. (Amended) The position sensor according to claim 1, further comprising:

a pair of assemblies, each including a stationary signal-detecting capacitor plate,

a stationary segmented signal-transmitting capacitor plate, a dielectric element disposed between the plates, and an elongate member rotationally coupled to the dielectric element; and

wherein the elongate members are supported at right angles to one another to measure movement in x and y dimensions.

Please replace current claim 10 with the following:

10. (Amended) A method of sensing position, comprising the steps of:

providing the position sensor according to claim 1 and placing the signal-detecting plate at a known electrical potential, then:

a) placing one of the signal-transmitting plates at a first electrical potential;

b) changing the potential on the signal-transmitting plate to second known potential;

c) measuring and storing the capacitance between the signal-transmitting plate and the signal-detecting plate;

d) repeating steps a) through c) for each segment of the signal-transmitting plate; and

e) determining the position of the dielectric element and elongate member as a function of the stored capacitance measurements.

[Please replace current claim 11 with the following:]

11. (Amended) A capacitive-based joystick configured for interconnection to a utilization device, comprising:

a housing having a top surface;

a stationary signal-detecting capacitor plate disposed within the housing;

a stationary signal-transmitting capacitor plate disposed within the housing parallel to, and spaced apart from, the signal-detecting capacitor plate, the transmitting capacitor plate being divided into a plurality of electrically separated segments;

a dielectric element disposed within the housing between the signal-detecting and signal-transmitting capacitor plates;

a joystick lever supported for pivotal movement having a proximal end for user engagement and a distal end which extends through the top surface of the housing and at least one of the signal-detecting

and signal-transmitting capacitor plates, enabling the lever to laterally shift the dielectric element in x and y directions in a plane substantially parallel to the stationary plates as a function of user position;

circuity in electrical communication with the stationary plates, the circuitry being operative to

(a) measure the capacitance between each segment of the signal-transmitting plate and the signal-detecting plate, and (b) determine user position as a function of the measured capacitance; and

an output for communicating the user position to the utilization device.

Cancel claim 13.

Please replace current claim 14 with the following:

14. (Amended) The joystick according to claim 11, wherein the dielectric element is non-circular, enabling the circuitry to determine user rotation of the lever with or without laterally shifting of the dielectric element.

Please replace current claim 16 with the following:

16. (Amended) The joystick according to claim 11, wherein the plurality of electrically separated segment includes 3 or 4 arcuate segments.

Please add new claims 18-26 as follows:

18. The position sensor according to claim 5, wherein the dielectric element is oval or egg-shaped.

19. The position sensor according to claim 1, wherein the plurality of electrically separated segment includes 3 or 4 arcuate segments.

20. The position sensor according to claim 1, wherein:

the segments of the signal-transmitting plate are arranged as parallel segments in one direction; and

manipulation of the first end of the member causes the dielectric element to laterally shift in that

direction relative to the parallel segments.

21. The position sensor according to claim 1, wherein:
the elongate member includes a pivoting coupling between the first and second ends; and
the distal end of the elongate element is loosely coupled to the dielectric element so that the dielectric element remains in a plane substantially parallel to the stationary plates as the dielectric element is laterally shifted.
22. The position sensor according to claim 1, wherein:
the movement of dielectric element is constrained by the spacing of stationary plates so that the dielectric element remains in a plane substantially parallel to the stationary plates as the dielectric element is laterally shifted.
23. The joystick according to claim 11, wherein:
the elongate member includes a pivoting coupling between the first and second ends; and
the distal end of the lever is loosely coupled to the dielectric element so that the dielectric element remains in a plane substantially parallel to the stationary plates as the dielectric element is laterally shifted.
24. The joystick according to claim 11, wherein:
the movement of dielectric element is constrained by the spacing of stationary plates so that the dielectric element remains in a plane substantially parallel to the stationary plates as the dielectric element is laterally shifted.
25. A capacitive position sensor configured for interconnection to a utilization device, comprising:
a non-circular dielectric element rotatable in a plane perpendicular to an axis of rotation;
a pair of electrically conductive capacitor plates, one supported on either side of the dielectric element, neither plate consuming an entire radial area around the axis of rotation;

circuity in electrical communication with the capacitor plates, the circuitry being operative to
(a) measure the capacitance between the capacitor plates, and (b) determine the rotational position of the
dielectric element as a function of the measured capacitance; and
an output for communicating the rotational position to the utilization device.

26. The capacitive position sensor according to claim 25, wherein:
the dielectric element is coupled to a scroller wheel; and
the utilization device is a computer.